Thermodynamic studies of actinide complexation with carboxylate ligands at elevated temperatures

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Complexation of actinides with a wide variety of ligands has been studied for a few decades, but the majority of the data are for room temperature. Since the temperature of the nuclear wastes in storage tanks is significantly above 25^{o} C, lack of thermodynamic data at elevated temperatures makes it difficult to understand and predict the chemical behavior of actinides in waste processing. In this work, complexation of actinides with a series of carboxylic acids was studied by variable temperature potentiometry and calorimetry in a temperature range of 25^{o} C to 70^{o} C. These data, in conjunction with the characterization of species by spectrometry, help to develop strategies for nuclear waste treatments.

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